UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/684,152	10/10/2003	**Allan O. Devantier**	11336-434 (P03060US)	2307

81166 7590 05/20/2009

HARMAN - BRINKS HOFER CHICAGO
Brinks Hofer Gilson & Lione
P.O. Box 10395
Chicago, IL 60610

EXAMINER	
MONIKANG, GEORGE C	

ART UNIT	PAPER NUMBER
2614	

MAIL DATE	DELIVERY MODE
05/20/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/684,152	DEVANTIER ET AL.	
	Examiner	Art Unit	
	GEORGE C. MONIKANG	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 March 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

In regards to applicant's arguments that the Rabinowitz reference fails to disclose predicting transfer functions for at least two listener positions and statistically analyzing the predicted transfer functions, examiner disagrees. The Rabinowitz reference discloses predicted a transfer function for at least two listener positions (*Rabinowtz et al, fig. 4: 48, 52; paras 0030-0031: transfer function is calculated and checked for validity so that if the transfer function is not valid, adjustments are made and the function is calculated again until valid for two locations*) and statistically analyzing the predicted transfer function (*Rabinowitz et al, fig. 4: 56: frequency response is calculated across numerous locations after which the data generated is combined and an equalization pattern is predicted based on this information and used to obtain the sweet spot; (where statistically will be broadly interpreted as collection of data)*).

Therefore the Rabinowitz reference anticipates the invention as claimed by the applicant.

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 29-32 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 29-32 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Supreme Court Precedent and recent Federal

Circuit decisions indicate that a statutory "process" under 35 U.S.C. 101 must be tied to another statutory category (such as a particular apparatus) or transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim recites a series of steps or acts to be performed, the claim neither transforms underlying subject matter nor is positively tied to another statutory category that accomplishes the claimed method steps, and therefore does not qualify as a statutory process. For example the method including the step of recording, determining, analyzing and modifying is of sufficient breadth that it would be reasonably interpreted as a series of steps completely performed mentally, verbally or without a machine.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 5-30, 33-36 & 39-42 are rejected under 35 U.S.C. 102(e) as being anticipated by Rabinowitz et al, US Patent Pub. 2003/0179891 A1.

Re Claim 1, Rabinowitz et al discloses an audio system comprising at least one correction factor, the correction factor selected based on a method comprising: generating acoustic signals from at least one loudspeaker placed at potential

loudspeaker locations (*figs. 1, 5: 14 & 16; fig. 3: 20; paras 0010, 0021, 0027: microphone and speakers in various locations generate and pick up sounds from said various locations*); recording transfer functions for the generated acoustic signals at a plurality of listening positions (*figs. 1, 5: 14 & 16; fig. 3: 20; paras 0010, 0021, 0027: microphone and speakers in various locations generate and pick up sounds from said various locations*); determining at least one potential correction factor (*para 0031*); modifying the transfer functions based on the potential correction factors in order to generate predicted transfer functions (*fig. 4: 48 & 52; paras 0030-0031: transfer function is calculated and checked for validity so that if the transfer function is not valid, adjustments are made and the function is calculated again until valid*); statistically analyzing across at least one frequency of the predicted transfer functions for the plurality of listening positions and selecting a correction factor based on the statistical analysis (*fig. 4: 56: frequency response is calculated across numerous locations after which the data generated is combined and an equalization pattern is predicted based on this information and used to obtain the sweet spot; (where statistically will be broadly interpreted as collection of data)*).

Re Claim 2, Rabinowitz et al discloses the audio system of claim 1, where the potential correction factor is a non-temporal correction factor (*para 0031*).

Re Claim 3, Rabinowtz et al discloses the audio system of claim 2, where the non-temporal correction factor is selected from the group consisting of gain, amplitude, and equalization (*paras 0030-0031*).

Re Claim 5, Rabinowitz et al discloses the audio system of claim 1, where the potential correction factor is a temporal correction factor (*paras 0030-0031: such as time stability which can be broadly interpreted as time delay compensation*).

Re Claim 6, Rabinowitz et al discloses the audio system of claim 1, where the statistical analysis indicates efficiency of the predicted transfer functions for the plurality of listening positions (*fig. 4: 56: frequency response is calculated across numerous locations after which the data generated is combined and an equalization pattern is predicted based on this information and used to obtain the sweet spot; (where statistically will be broadly interpreted as collection of data)*).

Re Claim 7, Rabinowitz et al discloses the audio system of claim 6, where efficiency is examined for predetermined frequencies (*fig. 4: 56: frequency response is calculated across numerous locations after which the data generated is combined and an equalization pattern is predicted based on this information and used to obtain the sweet spot; (where statistically will be broadly interpreted as collection of data)*).

Re Claim 8, Rabinowitz et al discloses the audio system of claim 7, where selecting a correction factor based on the statistical analysis comprises selecting a value for the correction factor to increase efficiency of the audio system in the predetermined frequencies (*fig. 4: 56: frequency response is calculated across numerous locations after which the data generated is combined and an equalization pattern is predicted based on this information and used to obtain the sweet spot; (where statistically will be broadly interpreted as collection of data)*).

Re Claim 9, Rabinowitz et al discloses the audio system of claim 8, where the potential correction factor comprises potential volume correction (*fig. 4: 48 & 52; paras 0030-0031: transfer function is calculated and checked for validity so that if the transfer function is not valid, adjustments are made to the volume and the function is calculated again until valid*); and where selecting a value to increase efficiency comprises selecting a value that decreases volume of at least one of the loudspeakers in the audio system (*fig. 4: 48 & 52; paras 0030-0031: transfer function is calculated and checked for validity so that if the transfer function is not valid, adjustments are made to the volume and the function is calculated again until valid*).

Re Claim 10, Rabinowitz et al discloses the audio system of claim 1, where the statistical analysis indicates consistency of the predicted transfer functions across the plurality of listening positions (*fig. 4: 56: frequency response is calculated across numerous locations after which the data generated is combined and an equalization pattern is predicted based on this information and used to obtain the sweet spot; (where statistically will be broadly interpreted as collection of data)*).

Re Claim 11, Rabinowitz et al discloses the audio system of claim 1, where the statistical analysis indicates flatness for the predicted transfer functions (*fig. 4: 56: frequency response is calculated across numerous locations after which the data generated is combined and an equalization pattern is predicted based on this information and used to obtain the sweet spot; (where statistically will be broadly interpreted as collection of data)*).

Claim 12 has been analyzed and rejected according to claim 1.

Re Claim 13, Rabinowitz et al discloses the computer readable medium of claim 12, where the statistical analysis indicates efficiency of the predicted transfer functions for the plurality of listening positions (*fig. 4: 56: frequency response is calculated across numerous locations after which the data generated is combined and an equalization pattern is predicted based on this information and used to obtain the sweet spot; (where statistically will be broadly interpreted as collection of data)*).

Re Claim 14, Rabinowitz et al discloses the computer readable medium of claim 12, where the statistical analysis indicates consistency of the predicted transfer functions across the plurality of listening positions (*fig. 4: 56: frequency response is calculated across numerous locations after which the data generated is combined and an equalization pattern is predicted based on this information and used to obtain the sweet spot; (where statistically will be broadly interpreted as collection of data)*).

Claim 15 has been analyzed and rejected according to claim 11.

Re Claim 16, Rabinowitz et al discloses the computer readable medium of claim 12, further comprising logic for recommending a specific correction factor (*fig. 4: 56: frequency response is calculated across numerous locations after which the data generated is combined and an equalization pattern is predicted based on this information and used to obtain the sweet spot; (where statistically will be broadly interpreted as collection of data)*).

Claim 17 has been analyzed and rejected according to claim 1.

Claim 18 has been analyzed and rejected according to claim 2.

Claim 19 has been analyzed and rejected according to claim 3.

Claim 20 has been analyzed and rejected according to claim 5.

Claim 21 has been analyzed and rejected according to claim 6.

Claim 22 has been analyzed and rejected according to claim 7.

Claim 23 has been analyzed and rejected according to claim 8.

Claim 24 has been analyzed and rejected according to claim 9.

Re Claim 25, Rabinowitz et al discloses the audio system of claim 17, where the statistical analysis indicates consistency of the predicted transfer functions across the plurality of listening positions (*fig. 4: 56: frequency response is calculated across numerous locations after which the data generated is combined and an equalization pattern is predicted based on this information and used to obtain the sweet spot; (where statistically will be broadly interpreted as collection of data)*).

Claim 26 has been analyzed and rejected according to claim 11.

Claim 27 has been analyzed and rejected according to claim 1.

Claim 28 has been analyzed and rejected according to claim 16.

Claim 29 has been analyzed and rejected according to claim 1.

Re Claim 30, Rabinowitz et al discloses the method of claim 29, where modifying the statistical analysis comprises applying potential equalization factors (*fig. 4: 56: frequency response is calculated across numerous locations after which the data generated is combined and an equalization pattern is predicted based on this information and used to obtain the sweet spot; (where statistically will be broadly interpreted as collection of data)*).

Re Claim 33, Rabinowitz et al discloses the audio system of claim 1, where the audio system comprises a first loudspeaker and a second loudspeaker; and where the correction factor selected is applied to at least on of the first loudspeaker and the second loudspeaker so that a signal for output on the first loudspeaker is different from a signal for output on the second loudspeaker (*fig. 4: 47-54: the correction factor is different for every loudspeaker position*).

Re Claim 34, Rabinowitz et al discloses the audio system of claim 33, where the first loudspeaker and second loudspeaker, prior to application of the correction factor, receive the same signal (*fig. 4: 46*).

Re Claim 35, Rabinowitz et al discloses the audio system of claim 34, where the first loudspeaker and second loudspeaker comprise subwoofers (*para 0021*).

Claim 36 has been analyzed and rejected according to claim 33.

Re Claim 39, Rabinowitz et al discloses the audio system of claim 34, further comprising selecting global correction to be applied to each of the first and second loudspeakers, the global correction providing global equalization of the first and second loudspeakers (*fig. 4: 56; para 0031: the equalization parameter is compared and adjusted so that no amplitude limits are exceeded*).

Claims 40-42 have been analyzed and rejected according to claim 1.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4, 31-32, 37-38 & 43-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rabinowitz et al, US Patent Pub. 2003/0179891 A1.

Re Claim 4, which further recites, "where the equalization is selected from the group consisting of parametric, graphic, paragraphic, shelving, FIR (finite impulse response), and transversal equalization." Rabinowitz et al does not explicitly disclose the group consisting of parametric, graphic, paragraphic, shelving, FIR (finite impulse response), and transversal equalization as claimed. Official notice is taken that both the concept and advantages of providing the group consisting of parametric, graphic, paragraphic, shelving, FIR (finite impulse response), and transversal equalization is well known in the art. It would have been obvious to use the group consisting of parametric, graphic, paragraphic, shelving, FIR (finite impulse response), and transversal equalization since they are methods used for equalization.

Re Claim 31, Rabinowitz et al discloses the method of claim 30, where recording transfer functions comprises recording transfer functions at a plurality of listening positions (*fig. 4: 47-52*). Claim 31 further recites "where the statistical analysis determines a frequency with a maximum spatial variance for the predicted transfer

functions, and wherein the potential equalization factors are applied at the frequency with the maximum spatial variance for a predicted transfer function." Rabinowitz et al does not explicitly disclose the statistical analysis determining a frequency with a maximum spatial variance as claimed. Official notice is taken that both the concepts and advantages of the statistical analysis determining a frequency with a maximum spatial variance is well known in the art. It would have been obvious to use the statistical analysis determining a frequency with a maximum spatial variance since it's a variation of standard deviation commonly used for statical analysis.

Re Claim 32, Rabinowitz et al discloses the method of claim 31, where the potential equalization factors comprise a bandwidth setting (*para 0027*), a level setting (*para 0030*). Claim 32 further recites "a center frequency at the frequency with the maximum variance." Rabinwotiz et al does not explicitly disclose a center frequency at the frequency with the maximum variance as claimed. Official notice is taken that both the concepts and advantages of a center frequency at the frequency with the maximum variance is well known in the art. It would have been obvious to modify the center frequency at the frequency with the maximum variance since it's a variation of standard deviation commonly used for statical analysis.

Re Claim 37, Rabinowitz et al discloses the audio system of claim 34, but fails to disclose where the same signal comprises a signal output from a decoder. However, official notice is taken that both the concepts and advantages of using a decoder are well known in the art. It would have been obvious for Rabinowitz et al to use a decoder

for the purpose of analyzing the loudspeaker position information and outputting it as surround sound.

Claim 38 has been analyzed and rejected according to claims 35 & 37.

Re Claim 43, Rabinowitz et al discloses the audio system of claim 42, but fails to explicitly disclose wherein the audio system comprises a first loudspeaker and a second loudspeaker; wherein the plurality of correction factors comprises a first correction factor and a second correction factor; wherein determining different combinations of potential correction factors comprises: a first combination having the first correction factor applied to the first loudspeaker and the first correction factor applied to the second loudspeaker; a second combination having the first correction factor applied to the first loudspeaker and the second correction factor applied to the second loudspeaker; a third combination having the second correction factor applied to the first loudspeaker and the first correction factor applied to the second loudspeaker; and a fourth combination having the second correction factor applied to the first loudspeaker and the second correction factor applied to the second loudspeaker, wherein the plurality of listening positions comprises a first listening position and a second listening position; and wherein modifying the transfer functions based on the different combinations of potential correction factors comprises: generating a predicted transfer function at the first listening position for each of the second, third, and fourth combination; and generating a predicted transfer function at the second listening position for each of the second, third, and fourth combination, wherein statistically analyzing across at least one frequency of the predicted transfer functions comprises: a first statistical analysis statistically

analyzing at least one criterion for the predicted transfer function at the first listening position for the first combination and the predicted transfer function at the second listening position for the first combination; a second statistical analysis statistically analyzing the at least one criterion for the predicted transfer function at the first listening position for the second combination and the predicted transfer function at the second listening position for the second combination; a third statistical analysis statistically analyzing the at least one criterion for the predicted transfer function at the first listening position for the third combination and the predicted transfer function at the second listening position for the third combination; and a fourth statistical analysis statistically analyzing the at least one criterion for the predicted transfer function at the first listening position for the fourth combination and the predicted transfer function at the second listening position for the fourth combination. However, since Rabinowitz et al discloses calculating different correction factors for different locations and combines them to obtain an optimum sweet spot (*fig. 4: 48-56: frequency response is calculated across numerous locations after which the data generated is combined and an equalization pattern is predicted based on this information and used to obtain the sweet spot; (where statistically will be broadly interpreted as collection of data)*), it would have been the designer's preference to create a system that combines specific correction factors for the purpose of obtaining specific transfer functions for a specific listener location.

Claim 44 has been analyzed and rejected according to claims 11 & 43.

Claim 45 has been analyzed and rejected according to claim 43.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GEORGE C. MONIKANG whose telephone number is (571)270-1190. The examiner can normally be reached on M-F. alt Fri. Off 7:30am-5:00pm (est).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/George C Monikang/ 5/18/2009
Examiner, Art Unit 2614

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2614